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The Past, Present, and Future of the Macintosh Desktop

To a first-time user, perhaps the most striking thing about the Macintosh is its use of the desktop metaphor: the folders and other icons intended to help make the Macintosh a user-friendly machine. For a perspective on where those ideas came from, how they were further developed by Apple, and what they might lead to in the future, we interviewed Dan Smith, an Apple Principal Software Engineer.

Signal: Give us a brief history of your career at Apple.

Smith: I've been at Apple for a little over five years now. I initially signed on to the Lisa project to work on what we called the Desktop Manager, essentially the equivalent of the Finder on the Macintosh. I worked on that for about two years, until the whole Lisa project was near completion. Then I became User Interface Coordinator for the Lisa project, then switched to a consulting role for the Macintosh, since Mac picked up about halfway into the Lisa development stage. I took some time off from the Macintosh and Lisa to start working on some future projects, did that for about nine months, then got pressed back into service to do a program development environment for the Macintosh, which is what I'm working on right now.

Signal: Were you the desktop programmer? What was the organization responsible for the desktop and the other Lisa software?

Smith: The effort was split up into a couple of different groups. There was the desktop group. Two of us actually did the implementation. I programmed the user interface portion, and Frank

Ludolph did a fair amount of the lower level implementation. Then there was the applications group, and that was split up into essentially the different applications that came out: LisaDraw, LisaWrite, and so on. There was also an operating system group, which did the much lower level software.

Signal: How did the ideas for the desktop originate, and how were they incorporated into your design?

Smith: That's a pretty interesting story. When I started at Apple, the idea of the desktop hadn't really quite been born. In fact, it was thought we'd do something fairly simple, and it would be a one-person job for a couple of months and it would be over. It was a little later in the project that we realized the desktop was going to be a central part of the entire system. The idea of an iconic form didn't come along until quite late into the development of the product. We started off with something that was pretty Smalltalk-like. There was a notion of a thing called a browser, which is essentially a table you could flip through, listing the documents you had in a hierarchical fashion. But the whole initial desktop was essentially technically oriented. We went through iteration after iteration. I remember doing prototype after prototype, and trying them on several groups of people, getting it to be more and more useable. But a number of us were not happy with what we were getting, so fairly far into the project a couple of us took a radical departure. We took a fair amount of our own time developing an iconic model, then sprung it on the whole group. It met with some resistance, but the majority of people really liked it. Then it was a mad rush to incorporate it into the final product.

Signal: Exactly who did what? Was the design fluctuating with the whims of a few individuals?

Smith: The desktop had a pretty fiery history. We did have design reviews of all of the components of

the system. We had teams: writers and marketing and engineering people who were all involved actively in the product. When we were actually doing the design and programming the application, the specification circulated amongst the teams. They all had a voice in the initial design of the product. As we circulated some of the actual design, and showed some of the prototypes, there was some frustration by some people that the desktop was not as easily useable as we would like. A couple of people, myself and Bill Atkinson primarily, and later Bruce Daniels, snuck off and worked on a prototype iconic model.

Signal: Where did your ideas for the iconic desktop come from?

Smith: It stemmed from a number of different places. From some of the work done at Xerox on the Alto computer. There were some IBM research papers, believe it or not, that discussed some office models that were iconic based that we looked at. And somewhat after we had worked on this, the Xerox Star computer had come out, so we compared it to our model. There was also some work done at MIT that had some influence on us. We got together and kicked around a lot of ideas, and tried to keep it consistent with our user interface philosophy. After a short period of time, we put together a prototype that stayed pretty close to the final product.

Signal: Was the big breakthrough essentially just realizing how to use icons inside of windows to represent files? Were you already using windows and pull down menus?

Smith: The initial design already had windows and pull down menus, although even those had some history. But the actual desktop's primary function was a filing function, an organizational function. The iconic model was really the late development.

Signal: So various ideas would come, they'd be implemented and

tried, and then approved by peer groups, as opposed to steadily working toward some predefined specification?

Smith: That's not quite true, although the desktop was the exception to the rule. All of the major software products were designed by a group responsible for that component, and were pretty much spec'd out completely before any implementation was done, although there would be little mock-ups to check out some of the ideas. We tried to do the same thing with the desktop, but it's one of those products everybody is forced to use, and everybody has an idea on how it should be, so there was a lot of feedback about that particular component. It took a fair amount of iterating to come up with something that appeared to be not only satisfying to the groups working there, but also something that went over fairly well in our user testing, which we did quite a bit of. We tested mainly on people who had very little computer experience. We tried initially to make it mainly those who were in Apple, who had very limited experience, maybe new hires or people whose job didn't involve working directly with a computer. Further on into the project, we actually hired some people for testing purposes and we had a set of people in-house whose primary job was to gather testing feedback. We even set up a couple of testing rooms, and carefully recorded everything that happened, and tried to draw whatever conclusions we could. It took a fair amount of that to get us headed in the right direction.

Signal: What are some examples of things considered for the desktop, but that ended up being changed or left out?

Smith: The initial version had icons which were three dimensional and much more cartoon-like and somewhat entertaining. In fact, the initial trashcan was this beat up old trashcan you'd expect to see in an alley, with the lid half open and

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flies buzzing around it. We had actually talked about putting in some sound effects for when somebody put something into the trashcan. That met with some resistance from some of the stodgier people on the team, so that was dropped. One thing in particular we had a heated debate about was the notion of whether a document had to be saved or not. A number of people on the project wanted the system to be as far removed from typical computer interactions, and be as concrete as possible. The argument was that when you write something down on paper, it's

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always there. You don't have to say "save" to prevent it from mysteriously disappearing, as opposed to a typical computer model where people think "I know I have something in the computer's memory, and it's temporary, and I have to make sure I get that information from memory onto the disk otherwise I'm going to lose it". So there was quite a heated debate on that one, and unfortunately we tended to battle more toward the computer model, for a couple of different reasons. One reason was familiarity, the idea that users who had computer experience were more used to saves. There were some technical considerations too, having to do with how much information we had to keep around all the time when somebody stopped working on a particular document. Another desktop feature was the problem you always have anytime you go to a filing system with folders buried in folders. This was something Frank Ludolph was very concerned about. How do I find my documents, how do I find my folder? With folders nested in folders, and having to double click and open them and search around, it became quite tedious to find something if you had misplaced it. Rightly so, he thought we were duplicating some of the frustrations a person would find in a normal office, having to manually dig through their filing cabinet to find something. A computer should be able to take care of that job for them, essentially doing an electronic search of the filing cabinet. That was a feature we wanted to implement on the Lisa, but didn't quite have time to do.

Signal: How would automatic searching have been accomplished?

Smith: That feature wasn't fully specified, but it would be primarily by specifying certain attributes about the item you were looking for, whether it was simply the title of the document you were looking for, or some key words in the document, almost like a database query. Something to make a search a lot less painful.

Signal: What other desktop capabilities never made it into your final model?

Smith: One was the ability to allow new applications to be added, which could operate on documents not of their type. Suppose somebody wanted to add a new compare program that compared two text files for example, and gave you the differences. With the user interface model we had, simply clicking on a document opened that document, or clicking on an application opened that tool. There was no real clear way of specifying documents of different types as essentially parameters to another program. Probably the biggest single feature missing in both the Lisa and Macintosh is the ability to automatically remember a series of actions and play those over again. One of the things the desktop did was to make most operations very

simple to do, which is a great benefit to first-time computer users. But computer users expect the ability to give the computer a series of commands and have the computer record those, and save them from the drudgery of having to repeat those over and over again. Primarily because of not having quite the right user interface for it, and the technical problems involved, that particular feature was never fully implemented in the Lisa or the Macintosh.

Signal: Were there any schemes that would allow repeatable commands?

Smith: There were a couple. One that comes to mind that was actually done with limited success was to simply record all the actions of the user on a real low level: the user moved the mouse from here to here, clicked the button, typed keys at this point. That allowed us to do little demos where the machine appeared to be running under automatic control. The problem with that approach is it requires you be in the exact same state every time you run this little script, even down to the exact position that icons are on the screen or within their folders. That situation turns out to be very rare, so that approach is flawed. It's also not something you can easily parameterize. You pretty much specify an absolute action.

Signal: Programmers were disappointed to find that this beautiful, iconic, straightforward, user-friendly, state-of-the-art desktop was built with a fairly old programming language and tools. The Macintosh didn't come with any new, powerful systems to make programming a Mac as easy as using one. Is there a lack of tools for developers to easily implement new Macintosh programs?

Smith: There's no question that implementing a Macintosh type of user interface is difficult, and the initial implementation on the Lisa and the Macintosh was done in pretty traditional form. What we've tried to move towards is more of an object-oriented implementation that involves extensions to existing languages. In the long run, that's really going to be the way to develop software for this type of a system. The problem you typically have with object-oriented software is performance and size. Since it's a general system, you tend to get a lot more software than you actually want because everything is built in, and you may be only using a subset. The size of any application tends to be quite a bit bigger, and the performance often can be quite a bit sluggish.

Signal: Has object-oriented programming really been proven? Both the Lisa and Macintosh have demonstrated excellent user software, but only using traditional, non-object-oriented programming. Apple's object-oriented systems always seem to arrive a day late and

a dollar short and have never really been used to implement anything of commercial significance.

Smith: That's certainly been true up to this point. Whether you can use that approach or not depends on how much horsepower you have behind you. Smalltalk is heavily object-oriented. Depending on what kind of machine you're running on, Smalltalk is a wonderful system to use, or it's just horribly slow and painful. So it's a combination of the hardware you have, and the software implementation.

Programmers who use an object-oriented system are really pleased with it, because of the amount of work that's already done for them. Developers will gravitate towards that type of a programming solution once it's implemented in the most efficient possible way, and there's sufficient hardware behind it to make the performance acceptable.

Signal: Why were the tools that Apple used to implement its first desktop applications never released to developers?

Smith: Great question. The reason is we didn't have the object-oriented extensions made to any of our languages at the time we were developing the product.

Signal: If the Apple programmers didn't need finished object-oriented extensions to complete their applications, why did you think third party developers would have to wait for the extensions to be completed before they could get tools for their products?

Smith: The primary reason was because of the difficulty we all faced while developing the applications. We were all working at Apple on a daily basis, and had access to everyone on the project on a face to face basis, and we were still having difficulties in the amount of time it took to implement just a standard user interface. Each of the applications had to implement scrolling, and the menus, and all of the appropriate things, according to the standard user interface and specification. It turned out to be just incredibly difficult to do, and incredibly time consuming.

Signal: Couldn't Apple programmers borrow each others' code and algorithms?

Smith: Well, we tried to some degree, but there would be these slight little differences. It was very difficult at times to trade some of that stuff, because of the way an application was structured. We were essentially pioneering all of those techniques, even the basic design of an application being event driven, as opposed to reading in a little command line and a carriage return and spitting out the answer. It was all quite a bit different from the programming experience of most people there. We just realized way too much effort went into developing desktop applications, and something better had to be done for outside developers.

Signal: How did you get involved with the Macintosh group?

Smith: Towards the end of the Lisa project, Macintosh development was getting much more established. I spent a little bit of time with Bruce Horn and Steve Capps, the people who worked on the Finder, because they were doing the same thing I'd done on the Lisa. We were able to share some ideas. That was useful for all of us. I had already conquered a number of the problems they were facing and, in their development, they had found a couple of interesting solutions to problems I had not found a solution for.

Signal: What's an example of something they found a solution for?

Smith: They had a user interface solution for the problem of how to get a tool to operate on documents not of its kind. The solution was to simply select all the documents and the application involved, and click on one of those as a set.

Signal: Wasn't the Macintosh group reinventing the wheel by not letting you write the Finder?

Smith: It was to some degree, but the Macintosh group was faced with constraints which were pretty extreme compared to those on the Lisa. The amount of memory available and not having any real hardware memory management made some things quite a bit more difficult on the Macintosh.

Signal: Was the Macintosh a step backwards from the Lisa? Was the machine sorely underpowered for what it was trying to do?

Smith: Not with respect to the original design goal. The original goal had envisioned the Macintosh as being a personal computer that would run a single application at a time. It would have superior graphics and the Lisa-style user interface. But it was going to be restricted in terms of exactly how much it could do. It turns out that in terms of computational power, in terms of raw speed, the Macintosh actually exceeded the Lisa to some degree.

Signal: Do you feel the Macintosh group did a

good job of capitalizing on what the Lisa group had pioneered? Or were not all the lessons learned?

Smith: Yes and yes. They did a tremendous job of leveraging off what Lisa did. All the graphics routines carried over, almost to the byte, thanks to Bill Atkinson's foresight. The window and

menu management routines were essentially brought over as is, at least as far as the interface. The major changes that had to be done for the Macintosh were that things had to be recoded in assembly language in order to get the program sizes down. But most of the interfaces and stuff like that were pretty

much the same, but with improvements along the way. In that sense, the Macintosh was really a second generation Lisa, so they had an opportunity to improve on a lot of things. In some cases, a step was made backwards.

Signal: What's an example of Macintosh

taking a step backward?

Smith: A step backward was the "run one program at a time" model. For example, you clicked on MacPaint, the entire screen would be cleared, and up would come something that was totally different than what you had been looking at before. The desktop model disappeared on you,

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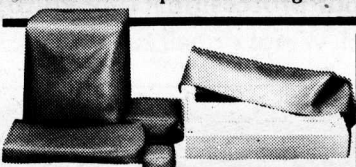
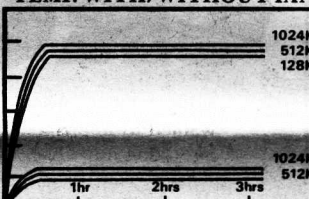
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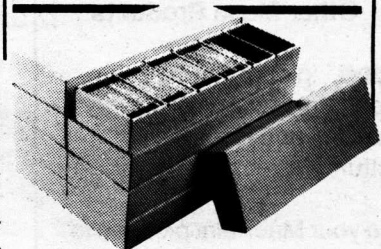
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and now you were running this entirely new program. If you wanted to do any type of filing operation, you either had to quit that program, go back to the Finder and manipulate your files, or there was this little dialogue box that allowed you to search through a list of names as opposed to seeing them in their iconic format. On Lisa, you stayed in the desktop the entire time and would just click on another icon to open it. That would open up a window, but you would stay in the desktop. You wouldn't get this

dramatic state change, and you also wouldn't have to go from at one point dealing with icons to, at another point, dealing with a list of names.

Signal: How much of that step backwards was forced by the hardware limitations of the Macintosh? Could the programmers have pulled off a multi-application environment like the Lisa?

Smith: That's a tough one. With the 128K of memory available on the original Macintosh, they really

couldn't have pulled it off. But with the 512K Macintosh, it was definitely more possible. Now with the Mac Plus, it could be done quite easily.

Signal: There are a lot of little differences between the Macintosh Finder and its predecessor, the Lisa desktop. The Lisa desktop underwent cycles of consumer testing and design reviews. Is it true the Finder programmers were influenced by a lot of Lisa features, but ended up doing many things

their own way just because they wanted to?

Smith: That's fairly accurate. The Macintosh group had much more liberty as far as the user interface design. They had the opportunity to make little tweaks to try to improve on the overall design. It wasn't that the Finder was totally unreviewed by anyone other than the programmers, but there was definitely more liberty. That's not necessarily a bad thing. The programming team on the Macintosh was quite a bit smaller. With a smaller group, they

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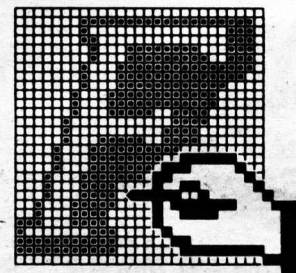
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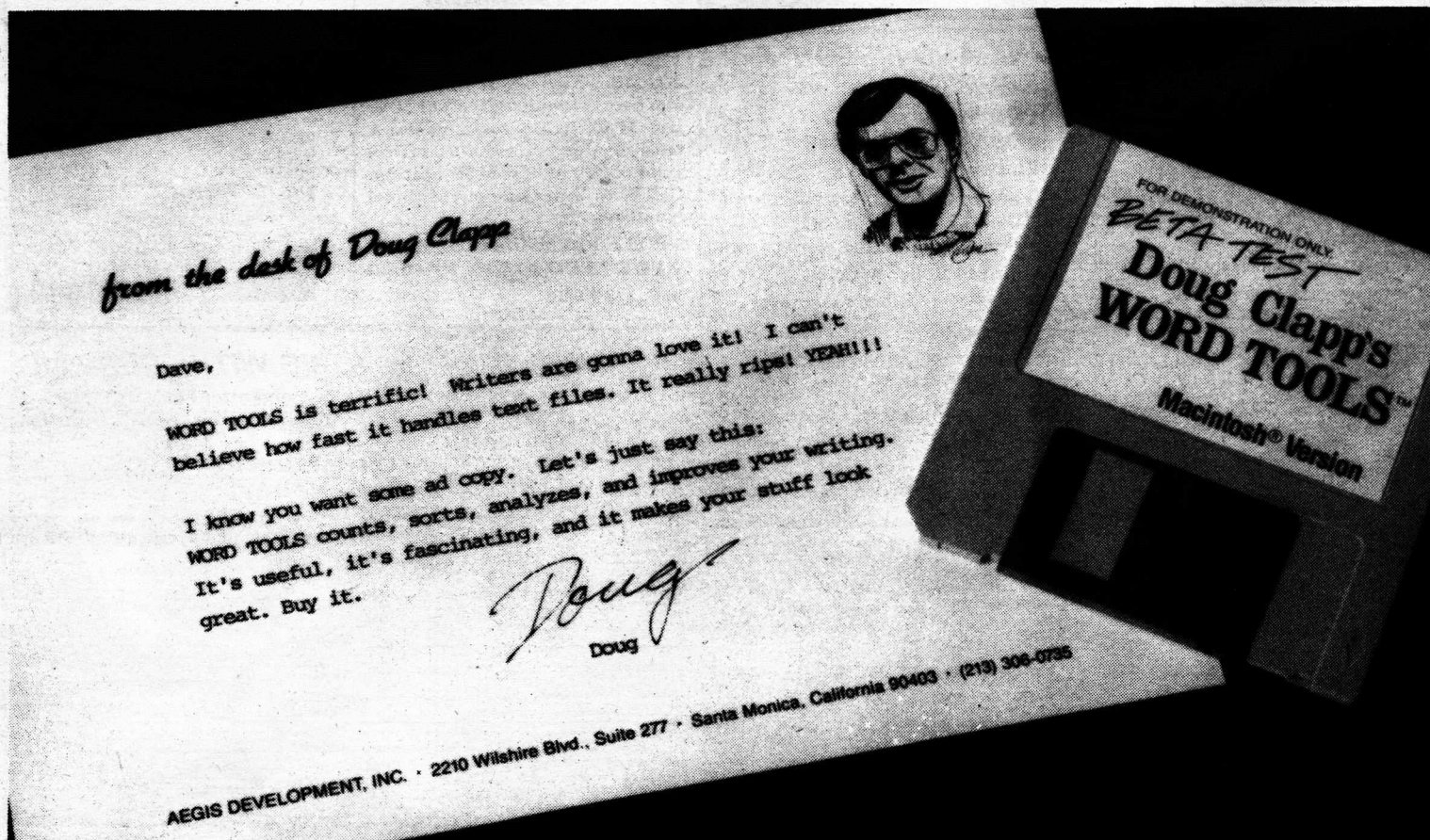
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had an opportunity to have the product be a little bit more consistent, because you get more of a single-mindedness to the product. It didn't look like it was hatched up by twenty-five different people.

Signal: It's interesting how the Macintosh was able to successfully provide a standard set of programming routines for developers, even though they aren't object-oriented, compared to the Lisa group's inability to do that. Why?

Smith: It has to do with the initial orientation of the project. When I first started on the Lisa project, the goal was to produce a machine essentially not programmable by outside developers. When we later decided it would be appropriate to have outside software developed, we were in a little bit of trouble, because we had created quite a complex system. It was very difficult to program. Whereas the Macintosh software architecture tended to be open at the very outset, and all the routines were carefully documented and carefully designed with respect to outside people using them.

Signal: What was your influence on MacPaint?

Smith: While I was working for awhile on future products, I was working with Bill Atkinson and others out at Bill's home. Bill was still working on MacPaint at the time. We would get together in his workroom and kick around various ideas about the MacPaint user interface. He would cook up a new version and hand it to us, and we would play with it and give him feedback. We got to be firsthand users with that product. That was a real treat.

Signal: MacPaint, for all its greatness, violates a lot of Apple's user interface guidelines. Was there ever any concern about that?

Smith: Yes, there was, as a matter of fact. There were a number of people who were opposed to some of the things Bill did. Bill's feeling was that we needed to pioneer some new ideas, and there were just certain things in some of the user interface guidelines which weren't appropriate for his application. He decided to push for some of those things, and hope for the best. It turns out he was able to move more towards the user interface guidelines down the line.

Signal: Why did it take so long for LisaDraw and LisaProject to migrate to the Macintosh and become MacDraw and MacProject?

Smith: The primary reason was the memory constraints on the Macintosh. Most of the programs on the Lisa were huge by comparison to other software products. Significant recoding had to be done in order to get the products moved

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over to the Macintosh. It takes a long time to program in assembly language, or to reorganize your entire program with space a primary consideration.

Signal: Didn't anyone realize Apple was trying to get the Macintosh to do Lisa-like things? Couldn't you have just put in more memory and saved many programmer-years of effort?

Smith: A lot of people said, myself included, before the Macintosh even came out, that the thing was designed with memory that was way too low. The primary motivation there, of course, was to keep the price down. They wanted the Macintosh to be affordable to the common person. This was going to be a computer most people could go out and buy. As time went on in the project, more and more features were added. They decided to go with a different disk drive, with different memory, and slightly larger display, so the price ended up creeping up out of the reach of the common person, to the \$2500 figure. At that point the memory limitation perhaps wasn't as good of an argument as it was earlier, because at that point the memory wasn't the dominating cost of the

product. So I'd have to agree with you on that one. If the Macintosh had initially come out with a larger amount of memory, it would have saved significant amounts of time in development.

Signal: Is there any hope for a true, Lisa-like, multi-application desktop environment on the Macintosh?

Smith: There certainly is.

Signal: You say that like you're hinting.

Smith: It's sort of like a hint. I know of some outside developments in that area, outside of Apple. There are a couple of efforts going on there. I wouldn't be surprised to see something like that fairly shortly.

Signal: Switcher and the desk accessories have always seemed to be somewhat desperate attempts to give the Macintosh a Lisa-like environment. Couldn't Andy Hertzfeld have made Switcher juggle multiple applications on the screen at once? It's already executing any application on demand, but idle applications are kept off-screen. What if the Switcher's multiple screens were shrunk down to icons and saved on a visible background,

or occupied windows that could be scaled and overlap? The Macintosh could still jump between applications, and yet the user could see all of them on the screen simultaneously.

Smith: I'm not sure if that particular idea was around at the time, but Andy's initial goal was to just do something simple, and that had the highest chance of success. Switcher seemed a fairly simple idea, although it turned out, because of the Macintosh architecture and the system design, to be quite difficult to do. It really took someone with Andy's intimate knowledge of the low level aspects of the system to pull that off. However, now that Switcher has been done, and it's been shown it's possible, we will see more Lisa-like models, where the visual continuity is retained.

Signal: Where do you see the user interface going? What will future products look like?

Smith: What we'll see in the long run, in terms of software products anyway, is a much tighter integration. You'll be able to buy small tools that fit into the rest of the system and work in combination with all other tools. Say, for example, you're trying to compose a

memo to someone. In front of you is your piece of paper in electronic form, and you're typing or writing on it. You want to do something like check the spelling of a word. Rather than necessarily invoking the spelling checker built into the word processing program you're using, you simply use the spelling checker you purchased the other day. It would be tightly coordinated with the overall system, so you could take that tool or any other tool and use it to operate on the document you're currently working on. What it's going to take to do something like this is a real solid low-level system design that provides a common data structure format everyone can plug into and that provides very easy access to all data on the system, whether it's a picture or a document or a database or whatever. Some sort of uniform style, such that any tool that's around can be used on any document. Some of that has been done to some degree with systems like Smalltalk, but nothing in any commercial sense.

Signal: That's a major hurdle for developers to overcome, but it probably won't seem like much of a breakthrough to users. How will

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products change in an obvious visual way that would be apparent from, say, looking at an ad for a computer of the future?

Smith: I don't think mice will be around forever. We'll move more towards something that allows you to bring the desktop metaphor closer to home, closer to reality. You could imagine your office desk actually being a display, and you actually manipulate information right on the desk.

Signal: What gets rid of the mice?
Voice?

Smith: Not necessarily. You may be writing on the desk as you do now, with a pen of some sort, or using a lot of the tools you would use today. They might be touch sensitive to some degree, such that you could move things around by touching them. We're looking more and more towards making the abstraction more and more concrete. Voice has its place, but not as big a role as some people think it does. People will find they don't really want to talk to their computer. Not only that, but it's not very efficient. Imagine a voice driven car and telling it to take a left turn, but not specifying quite enough detail.

Signal: If you had the super deluxe model, all you'd have to say is "take me to the airport". Can you somehow

characterize any of the work you've actually done on future products?

Smith: The only thing I can really say is that it's been looking down the line five years or so, with respect to what hardware will be available. A lot of the ideas people have had, Alan Kay in particular, who is now an Apple Fellow, require a significant amount of hardware. Some of those ideas are probably going to see the light of day in the not too distant future, as the hardware developers catch up with the minds of the software developers.

Club Notices And Newsletters

Publications Received For The First Time

The Apple-Dillo, \$20/year, River City Apple Corps, Box 13449, Austin, TX 78711, (512) 454-9962.

CMC, \$10/year, Connecticut Macintosh Connection Users Group, Box 270, Hartford, CT 06141.

MACS, Macintosh Apple Club of Spokane, 1112 E. Woodcrest Ct., Spokane, WA 99208, (509) 466-8037.

The MacValley Voice, \$20/year, The MacValley Users Group, Box 4297,

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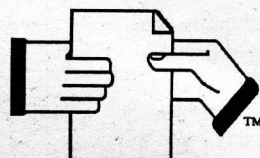
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— David Smith, *MacTutor*

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— Charlie Jackson, *MACazine*



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Burbank, CA 91503, (818) 784-2666.

Mecca, \$24/year, Macintosh Enthusiasts Club of the Capital Area, 622 Watervliet-Shaker Rd., Latham, NY 12110, (518) 462-3046.

Mesa, \$24/year, Macintosh Enthusiasts of San Antonio, Box 26000 #219, San Antonio, TX 78229, (512) 496-5043.

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Old Friends Keeping In Touch

Get Info, \$30/new membership, Club Mac Midwest, 6904 Hopkins Rd., Des Moines, IA 50322, (515) 276-2345.

Harvest, \$30/first year, Northern Illinois Computer Society, 1015 S. Ridge Ave., Arlington Hts., IL 60005, (312) 537-3856.

Known Users, \$20/year, Sequoia Macintosh Users' Group, Box 4623, Arcata, CA 95521, (707) 822-3578.

LA Mac, \$15/subscription, LA Mac Club, Box 27429, Los Angeles, CA 90027, (213) 462-2860.

MacCountry News, \$10/year, North Coast Mac User's Group, 503 Marylyn Cir., Petaluma, CA 94952, (707) 763-1124.

MacDigest, \$15/year for students, \$25 otherwise, Los Angeles Macintosh Group, 12021 Wilshire Blvd #349, Los Angeles, CA 90025, (213) 278-5264.

MacNews, \$15/year, Eugene Macintosh Group, Box 10988, Eugene, OR 97440, (503) 683-5565.

Mini'app'les, \$17/first year, Minnesota Apple Computer Users' Group Inc., Box 796, Hopkins, MN 55343, (612) 544-4505.

Mouse Droppings, \$12/year, Macintosh Users Group of Corvallis, 430 SW Crest Cir., Waldport, OR 97394, (503) 563-2501.

The MUDslinger, \$24/year, Macintosh Users of Delaware, Box 161, Rockland, DE 19732, (302) 994-5614.

NOMUG, \$24/year, New Orleans Macintosh Users Group, 111 Atherton Dr., Metairie, LA 70005, (504) 831-8275.

Penn Printout, University of Pennsylvania Computing Resource Center, 1202 Blockley Hall, Philadelphia, PA 19104, (215) 898-1780.

Resources, \$15/year, San Diego Macintosh User Group, Box 12561, La Jolla, CA 92037.

Scrumpy Newsletter, \$20/year, Orange Apple Computer Club, 25422 Trabuco Rd. Bldg. 105 #251, El Toro, CA 92630, (714) 770-1865.

Subscriber Interests And Activities

Joe Harabin, Lahaina, HI: I am about to use my Macintosh for page makeup for my regional magazine about the island of Maui, Hawaii.

Bill MacQuoid, Ontario, CA: Our Mac has become indispensable to our sign company. We prepare proposals and site plans on it. It also handles all our business forms and

correspondence.

Gregg Gunkel, Mt. Shasta, CA: I am a high school teacher of biology/computers/yearbook. I have used my Mac extensively for word processing and graphics at home. Professionally, I use PageMaker and MacPublisher. My enthusiasm for the Mac has resulted in the sale of dozens of Macs to friends and business associates, including five Macs sold to my superintendent's office and the four high schools of our district. I also have a Mac in my school lab along with nineteen Apples/Franklins, three Fujitsus, and one Tandy. The Mac gets used heavily by all computer classes and is used for my advanced class with MacPascal and Jazz. At home, my Mac is also used by my wife (who is not a computer user by nature) and my children (daughter age 5, son age 3).

Lynn Toller, Lewiston, MT: We use a Macintosh to print labels for our weekly shopper publication, and for our circulation records.

George S. Bredehoft, San Francisco, CA: I am an artist and have been doing some "paintings" using MacPaint, MacDraft, and a pre-release version of FullPaint. I am currently using Helix 2.0 (my Double Helix is coming "soon") for my data manipulation needs as well as for setting up systems for others.

Readers: are you doing anything interesting with your Macintosh? Please write and let us know!

Received, But Not Yet Reviewed

This list is not compiled from press releases, but only from real products that have actually arrived at our office.

STAT80, statistical software for the Macintosh. \$249 (standard version), \$399 (professional version), Statware, Box 510881, Salt Lake City, UT 84151, (800) 782-8807 or (801) 521-9309.

Checkwriter, accounts payable software for the Macintosh. \$69.95, Orion Training Systems, Box 94, Dallastown, PA 17313, (717) 757-7721.

MouseEase, Teflon pads for Apple mice. \$1.95, Tacklind Design Inc., 250 Cowper St., Palo Alto, CA 94301, (415) 322-2257.

The LisaTalk Report, a quarterly publication for Lisa and Mac XL users. \$42/year, The NetWorkers, 21 Canyon Rd., San Anselmo, CA 94960, (415) 258-9152.

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MacLabeler 2.0, a label generator for Macintosh disks. \$49.95, Ideaform Inc., Box 1540, Fairfield, IA 52556, (515) 472-7256.

The Best of Icon, selected material from *Icon*, a publication of the Association of Apple 32 Users. \$5, A32, Box 634, Santa Clara, CA 95052, (408) 988-5594.

Dubl-Click Calculator Construction Set, Macintosh software for creating custom desk accessory calculators. \$99, Dubl-Click Software, 18201 Gresham St., Northridge, CA 91325, (818) 349-2758.

Transylvania (new "Comprehend" version), an adventure game for the Macintosh. \$39.95, Polarware-Penguin Software Inc., Box 311, Geneva, IL 60134, (312) 232-1984.

Mac Software for Pennies, a book by Bertram Gader and Manuel V. Nodar. \$12.95, ISBN 0-446-38285-X, Warner Books Inc., 666 5th Ave., New York, NY 10103.

Beginner's Guide to Multiplan for the Macintosh, a book by Susan H. Sutphin. \$19.95, ISBN 0-13-071697-9, Prentice-Hall Inc., Englewood Cliffs, NJ 07632.

The Graphics Magician, Macintosh software for drawing, animation, and programming. \$79.95, Polarware-Penguin Software Inc., Box 311, Geneva, IL 60134, (312) 232-1984.

McAssembly, an assembly language development system for the Macintosh. \$89.95, Signature Software, 2151 Brown Ave., Bensalem, PA 19020, (215) 639-8764.

ods/Sales Consultant (demo version), sales training software for the Macintosh. \$300 (\$15/demo), ODS Inc., 1011 E. Touhy Ave. #535, Des Plaines, IL 60018, (312) 699-4156.

Sword of Kadash, an adventure game for the Macintosh. \$39.95,

Polarware-Penguin Software Inc., Box 311, Geneva, IL 60134, (312) 232-1984.

PosterMaker, a graphics scaling program for the Macintosh. \$39.95, Strider Software, Beecher Lake Rd., Pembine, WI 54156, (715) 324-5487.

This Month's Mailbag

Fatten Your Mac For \$50?

With the recent glut of computer components on the market, it is now possible to buy all the parts you need to fatten your Mac to 512K for \$50. By spending a hair over \$150 at a local chip supermarket that advertises in the Sunday paper, I bought all the parts required to upgrade three Macs. Armed with the *Dr. Dobbs* article on how to do the upgrade, I proceeded. However, I elected to leave the tough parts of the upgrade to an expert technician who works at my company. For another \$25 per machine in labor costs, I had someone who works on circuit boards for a living do the unsoldering of the old RAM chips.

My intent with this letter is to let the do-it-yourselfers know how economical it is now to upgrade their Macs, as well as drive the price of the aftermarket upgrades down a bit. Next time you talk to someone who is charging \$150 or more to do the upgrade, at least you'll know what their *potential* profit margin is. However, don't be fooled by the low chip cost versus the cost someone charges you for the upgrade of your machine. There's a lot of risk for someone to guarantee their work. If they break your machine while upgrading it, they could spend lots of hours trying to fix it, and hundreds to buy a new board from Apple.

Scott Taggart, Fremont, CA

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Speaking of RAM, here's our challenge to the manufacturers: produce an 8 or 16 megabyte machine, and leave out the disk! Just about all personal computer users we know never have more than a few megabytes of data online at any one time. Give them a huge RAM-only machine, and just completely leave out those slow, expensive hard disks. Use a tape cartridge for backup and exchanging data and software with other machines. The tape only has to load all of RAM at power on, and automatically kick in and save all of memory at power off or because of a blackout. A battery would

be necessary for blackouts and brownouts, but only until memory was saved to tape. Just think: no more moving parts while the machine is in use, no more operating system overhead and delays in dealing with disks and their files. Everything's simply in memory! We're convinced it's the wave of the future. -Editors

Word, 1stBase, Speller...

Am I the only one disappointed with Microsoft Word? After waiting a year for its release, I was disappointed with its general sluggishness and the squiggly way it writes when you try to

insert something between two words. But worst of all, for me, is not knowing what page you are on. I use my Mac for writing English-as-a-second-language materials, including examinations, and it's terrible to end up with your instructions on one page and the questions on another.

One program I have liked is 1stBase, especially the improved version. It's simple to use, but if you're willing to make the effort, it can be quite sophisticated too. For my work, the Hayden:Speller described in *Signal #23* is quite nice because it lists and counts all the words you use in a file. When writing material for beginning language students, it's very important to be able to control the vocabulary you're using. Unfortunately, it doesn't work in Spanish; 1stBase does.

Another program that is very useful for me is Multiplan. Because it sorts, it's great for word lists and neat, workable columns.

After using it a year I like the Mac very much, but not the Finder. I spend too much time watching the watch icon. I also question Mac's reliability. Of five of us who bought them in 1984, four have had to replace either power supplies or mother boards, and I don't mean for an upgrade! Two of us are now on our third power supply, and I'm also on my second internal disk drive.

Betty McCarthy-Yamins,
Chicago, IL

OverVue Overview

As a small manufacturing business, we need to keep accurate records of all our customers, invoices, purchase orders, and financial accounts.

We also keep a long list of potential customers with addresses, phone numbers, type of products, dates of contact, material sent, etc. The best software program that we have found to do that on our Mac is OverVue by ProVue Development Corp.

OverVue has a wonderful search and select capability, which can locate a name or a string of words in seconds. It's much simpler in comparison to Multiplan, with which we had so much trouble before OverVue came out. No more sorting alphabetically to look for a name or word.

The pull down menus for OverVue include such math operations as total, count, average, and running total. These are great for creating ledgers. Even a large column can be totaled or put into our own equation in a few seconds.

A new feature available in OverVue II is Clairvoyance. If you have a column which lists many of the same names, the Clairvoyance feature can save you a lot of unnecessary typing. After you have typed the first few letters, the computer recognizes it and will beep and finish filling in the rest of the name for you. Another handy feature is using the No Unique or No Duplicate attributes. If you have a column with names that you do not want duplicated, the computer will beep and tell you that the name you have just inserted is a duplicate. You have the option to either cancel or keep the new name.

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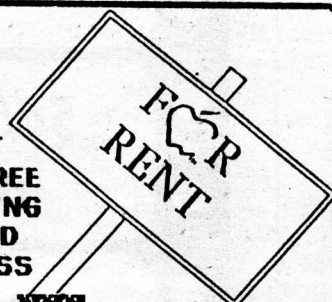
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the screen at one time. But when you click on the little Zoom box in the lower right corner, the entire file is shown on the screen with columns that you can rearrange to your liking. It is a much better idea than scrolling back and forth.

When we first received our copy of OverVue, it had a very bad feature. When you used the backspace key, it would eliminate an entire record. There wasn't any Undo to bring it back, except for your memory. Now on the updated version, Confirm Backspace is available. If you happen to backspace by accident, the computer will ask you if you want the record deleted.

We are very satisfied with the OverVue program and hope that the software companies keep up the good work. It is time they realized that some of us want to use the Mac for a good business computer instead of a toy.

Melody Brown, Grafton, ND

Mainframe Tools Wanted

As an addicted Macintosh user, I read your newspaper with much interest. Over the last twelve years, my job has been one of developing application systems on large IBM mainframes. Recently, I noticed that there are a few products coming out on the market that can help programmers, analysts, and project managers do their job more rapidly and more accurately by automating and integrating the software

development process. The problem is that most of the products run on the IBM PC only.

I am looking for products that run on a Mac and assist a large development team in most of the following issues: integrated system dictionary, project management and quality assurance, reports and screens specifications, system narratives and analysis reports, presentation graphs and structured charts, entity/relationship data model diagrams, data flow diagrams and database record layouts, and pseudo-code generation for large mainframes.

I hope I will not be doomed to use an IBM PC just because MacWrite, MacDraw, and MacProject, although quite useful for me as standalone products, cannot compete with what is available and integrated on the IBM PC.

Jacques Parent, Boucherville, Québec

Mincing Words With Word

I was happy to see Brian Jay Wu's *Mincing Words* discussion about Hayden:Speller in *Signal* #23. I decided to order it based on his comments. No blame on him of course. After booting it up and trying to use it, I discovered just how limited it is. If you have a large vocabulary and write a document of more than around 5,000 words, you're going to have problems with this application. As Mr. Wu mentioned, if your document contains more than 1,500 different

words, it won't get spell-checked. Instead, you'll get a dialog box telling you that there are too many different words, and that you must split your document and try again.

The document I attempted to check was my master's thesis done in Microsoft Word. Since Chapter 1 was a single document of under 20,000 characters, I had no problem. The other chapters, however, all ranged between 75,000 to 90,000 characters, and I was required to split all of them if I wanted to get them spell-checked. That was a considerable, time-consuming hassle, since everything was formatted. Added to this was Speller's paucity of dictionary entries. About 2,000 words worth, as far as my thesis was concerned. I found myself scrawling missing words on a notepad as I went along, which I later edited into the "My Dictionary" option. This becomes quite tedious, and coupled with the application's inability to check more than 1,500 different entries, it is just barely worth the hassle.

Writers of any lexical prowess will find this to be a rather exasperating spelling checker. You will be penalized for having a rich vocabulary. Just as MacWrite was designed primarily as a memo-writer, Speller seems to have been designed as a memo-checker. This is not to say that it is a terrible application. It is extremely easy to use, and when you are able to check a document, it works quickly and

smoothly. But I'm not entirely convinced that this makes up for its acute limitations.

It struck me as quite odd that Microsoft should tacitly endorse the product by putting Hayden Software's advertisement in Word's package, considering that Word can easily create documents too long and varied for Speller to work efficaciously. Perhaps because it was the only spelling checker on the market that would work with Word?

Speaking of Word, and perhaps I am misinformed, but I thought that one was supposed to be able to create documents as long as a single disk could store. This apparently is not so. As soon as I neared the 120,000 character mark, I started getting a dialog box that told me the session was too long, the disk was full, and I'd have to save to another disk. The data disk in my external drive was not full, however, having a comfortable 190K free. It may well be that disk-length single documents (such as a book) can be done only on the 512K system, but if so, there's no mention of it anywhere that I've seen in the documentation. Saving a document that is 100,000+ characters long is a real pain on Word. The longer the document gets, the longer it takes to save, and at the 100K mark it took nearly fifteen minutes. Word's user guide recommends saving often, but that seems practical only for shorter documents. Who wants to

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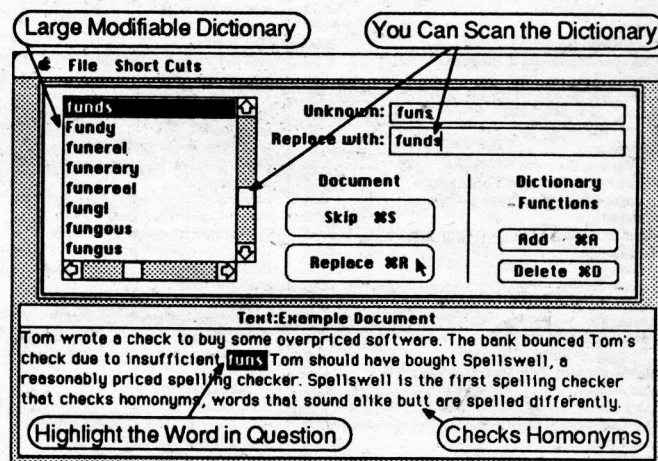
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work for fifteen minutes and then wait for up to fifteen more while that work is being saved? What's the point of being able to write super long documents if it's going to take forever to save them? Even if I could write a document as large as my data disk, I doubt that I'd do it. Each save would eventually take over twenty minutes to complete! Why on earth must the program rewrite the entire document when it saves?

By and large, I'd have to agree

with Geoff Puterbaugh's review of Word in *Signal* #22, though it should also have mentioned that Word is not as "intuitive" as MacWrite. It lacks the versatility of MacWrite's headers and footers, and does not display page divisions in a readily interpretable fashion. This is a peanuts trade-off for all of the other word processing power you get in return. Also, converting MacWrite documents into Word documents couldn't be easier: choose Open from

the File menu, and Word will include your MacWrite files in the document window. Open a MacWrite document, and Word automatically converts it into a Word document, saving even the MacWrite formatting (except for the headers and footers).

I can live without a built-in spelling checker for Word, but I find it unfortunate that there is no provision for creating automatic indexes or a table of contents. The only program I have that can do that

in a limited fashion is MacPublisher, but it lists only articles as they appear on an electronic layout board, and the word processing component of MacPublisher is too limited to be of much value in real writing. I wonder what the possibility for doing a tightly written speller as a desk accessory would be?

As the clincher for testing Hayden:Speller, I ran the first draft of this letter through the program to see how many "suspect" words weren't in the main dictionary nor in "My Dictionary." Words not found: accessory, booting, clinch(er), dialog, efficacious(ly), endorse, footer, hassle, icon, juggle, laser, mincing, misinformed, notepad, paucity, penalized, scrawling, semaphore, tacitly. Nineteen words, most of which are fairly common. Especially surprising to me were the absence of dialog, endorse, clinch, scrawling, icon, juggle, and accessory. What spelling dictionary was this program based upon?

Gene Van Troyer, Portland, OR

As 7/7 users, we own a copy of LisaWrite's American Heritage 80,000 word dictionary in a file that can be easily transported to the Macintosh, if we can figure out how it's compressed (and if that isn't violating some kind of license, and if we have the time to try it). If we're lucky, the dictionary uses some kind of straightforward packing like MacWrite 4.5 does, which is documented in Apple's Macintosh Technical Note #12.

Like a lot of other Macintosh applications, Word might be creating temporary work files while it executes, which would momentarily be using up some of your apparently available disk space. If you deliberately crash the Mac while using an application and then reboot, the Finder will often display a temporary scratch file or two that the application would normally have automatically deleted if you had cleanly quit instead of crashing. -Editors

MacWorks Likes DMPs!

I own a Lisa 2/5, and I have a copy of MacWorks. I don't use the Mac software much, I'm afraid. The printer that came with my Lisa is the original DMP model. Since there is no Mac driver for that printer, I find the Mac software almost useless. I know that I could just buy another printer, but that seems so foolish when the old DMP still works fine and the Lisa still does just about everything that I need a computer for.

David E. Johnston,
Baton Rouge, LA

There is a DMP driver! We've been using it successfully for almost a year. Get the released version of MacWorks and use the Parallel Printer Install application, as described on page 12 of the MacWorks manual. -Editors

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(40 to 60K?) people who bought an eXLisa and I am interested in any information concerning it.

I went into an Apple dealer in the fall of 1984 looking to buy a Mac. The local dealer (who went out of business a month after my purchase) had none in stock, but did have some Lisas. "Big Macs they call them. It will not only run the superior Lisa software, it

will run and do everything that a Mac can. And unlike the Mac, it's expandable." I bought the Lisa 2 as a "Big Mac" with the salesman saying that I should learn how to use the Mac software before tackling the more powerful and superior Lisa software. After using Multiplan (crashing whenever closing with MacWorks 1.0), MacPaint, and MacWrite for a few months, I was ready to "move up". I

found another Apple dealer and bought a copy of 7/7, which required that I purchase a hard disk and Apple's 512K card. The dealer said it was the only card available. A couple of weeks later I read about the AST card. I wanted the internal 10MB hard disk so I could run both MacWorks and 7/7 efficiently from the same disk. I was told it was not available, I should get the 5MB Profile, and I could return it when the Profile 10 or an internal 10MB disk was available. It took less than one day to confirm that

the 5MB disk would not do the job. It didn't take much longer to feel that I had been suckered into buying 7/7 (and Apple's memory card) on the premise that it was better in all ways than any Mac software. Getting any information about new versions of MacWorks or how to deal with any problems in 7/7 was impossible from this second Apple dealer. With such a lack of help, I figured that I had better see if the dealer would keep his promise to exchange hard disks. After many hours and trips to the store, the manager allowed me to return the Profile and told me that I was not fit to be a customer of their store. He failed to tell the credit company that I no longer owed them the money for the purchase. That snafu took four or five months to straighten out. I found a third store and have had good luck with them.

My reasons for relating any of this sordid story is to establish that I too have suffered from Apple and their dealers' gross misrepresentation of the Lisa/Mac XL story. When I first read that *Semaphore Signal* was no longer going to report on the Lisa, I was disturbed. After thinking about it, I realized that moving on is really the only way to go. The Lisa is an old horse. While it was innovative when first released and it can still provide for increased productivity in a business, it is no longer on the leading edge of computer technology. Even though Apple has seriously violated the trust and loyalty of many of its past and potential future customers, I feel that if the force of eXLisa owners was put towards encouraging Apple to help us keep our computers current instead of whining about supporting an outdated operating system, everyone would benefit.

The attitude put forth in The NetWorkers' publication is boorish and perhaps even childish. In view of the price they are asking for their publication, they are attempting to exploit, prey upon, the owners and users of Lisas who have had a difficult time gleaning information from Apple and their dealers. In short, I feel that they are charging a premium price for what is (and if not, should be) public knowledge, supplied freely to eXLisa owners and users by Apple. I do want to thank you for your attitude and your efforts to disseminate accurate and timely information for the benefit of everyone, at a reasonable price.

I have a few comments about Apple's offer of \$450 for the migration programs and either Jazz or the Microsoft package. I was told by an Apple rep in early 1985

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that Apple was going to offer a migration package to 7/7 owners at a "ridiculously low price". Nine months later, their \$450 offer is, at the very least, an insult. Anyone can buy Jazz off the shelf for under \$350. The Microsoft package offer is a better deal and is cheaper than off the shelf, but not by much. I had the same feelings about Microsoft telling me that they will upgrade me to Excel for \$200 off of list price because I am a registered Multiplan owner. Gosh, what a good deal. Anyone can buy Excel for \$175 below list.

George S. Bredehoft, San Francisco, CA

Don't thank us for our "reasonable price", thank our advertisers. The NetWorkers owe Lisa users nothing, so it's fair for them to charge whatever they want. You have to realize that without a significant advertising base of Lisa products, they have to make subscribers subsidize the publication.

Whether Apple owes Lisa users anything is another matter. We run into a lot of users who felt Apple left them with a dead-end machine, and therefore still owes them something, but they invariably have stories similar to yours that involve not understanding the existing limitations of the system they were buying, and unreliable dealers who were quick to make unsubstantial promises.

Our attitude is to expect no more from hardware and software than we can see and do with it at the time of the purchase, in spite of any salesperson's promises. The vendors can never "violate our trust and loyalty", and we're never disappointed in what we buy.

As for the Lisa users who wrote us complaining they never got a Migration Kit offer, you can get an order form from Apple Customer Relations at mail stop 23AX, 20525 Mariani Ave., Cupertino, CA 95014 or by calling (408) 973-2222. -Editors

A Happy Upgradee

I got my 128K Mac about six months ago, and became very devoted to it. Like many Mac users, I rapidly tired of the "disk drive shuffle". My response was to get my memory upgraded. After extensive research, I finally settled on the

MicroConversion one meg upgrade. I have had it about six weeks and am very happy. I mostly use the extra memory as a RAM disk and have had very good results. Since Apple has announced the Mac Plus, I have decided that with the new ROM and the upgrade to a double-sided disk drive, I will have everything I need. Since I anticipate that new programs will fill the new memory size and disk drives, it is possible that I will need to add another meg. I am assured by the MicroConversion people that it will be simple and inexpensive to do so.

Marion Delahan, Bartlesville, OK

The feature that we especially like in the new ROMs is menu scrolling. Menus too long to fit on the screen will scroll if you drag below the last visible item and scroll back when dragged above the first visible item. That's perfect for people who like huge font and desk accessory menus that are too long for the screen. -Editors

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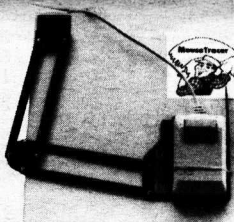
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